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Atty. Dkt. No. 035451-0145 (3682.Palm)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

Applicants: Hanson et al.

Title: NON-VISIBLE LIGHT
DISPLAY ILLUMINATION
SYSTEM AND METHOD

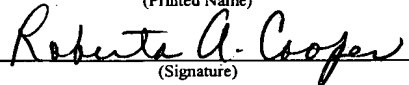
Appl. No.: 09/989,273

Filing Date: 11/20/2001

Examiner: Sawhney, Hargobind S.

Art Unit: 2875

Confirmation 9592
Number:

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Sir:

Transmitted herewith is the following document for the above-identified application.

[X] Reply Brief Under 37 C.F.R. § 41.41 (7 pages).

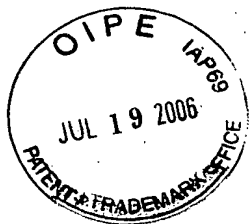
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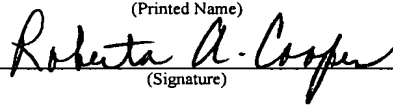
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REPLY BRIEF UNDER 37 C.F.R. § 41.41

Mail Stop **Appeal Brief - Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Under the provisions of 37 C.F.R. § 41.41, this Reply Brief is being filed in response to the Examiner's Answer dated May 19, 2006. The remarks included herein include subject headings corresponding to the subject headings in Appellant's Appeal Brief for ease of reference by the Board of Patent Appeals and Interferences. The Appeal Brief was filed February 23, 2006, in response to a Final Action dated August 24, 2005.

REMARKS

**II. REJECTION OF CLAIMS 1-2, 4, AND 6-9 UNDER 35 U.S.C. § 103(a)
BASED ON CHEN IN VIEW OF BAUR ET AL.**

With respect to claims 1, 2, 4, and 6-9, the Examiner's Answer included the following response to Appellants' arguments in the Appeal Brief:

“[C]oating” is defined as “a layer of substance covering another” (Ref.: Webster New Collegiate Dictionary, 10th Edition, Page 219)

As detailed in section 3 of this office action, Chen ('092) discloses a lighting system for a display (Figure 3) comprising:

a reflective layer 50,30- combination of the fluorescent pigment layer 50 optically in contact with the reflecting layer 30- (Figure 3, column 3, lines 5-7 and 11-20);

The fluorescent pigment layer 50 has been broadly interrelated as a coating when the layer is in optical contact with the reflection layer 30 (Chen, Figure 3).

Appellants submit that the Examiner is not entitled to such a broad interpretation of Chen. As shown in FIG. 3 of Chen, Chen clearly contemplates individual, separate layers for the “fluorescent pigment layer 50” and “reflection layer 30.” Chen at col. 2, lines 54-55. Chen does not teach or suggest a layer having “phosphorescent coatings,” where the same layer both “reflect[s] the invisible light from the light source and convert[s] the invisible light into visible light” as recited in claim 1. In discussing the advantages of using a separate fluorescent pigment layer, Chen in fact states that “it is difficult to control the uniformity of [a] fluorescent pigment layer [applied to a surface of a planar light source], thereby resulting in uneven light color.” Chen at col. 1, lines 58-63. Chen therefore in fact teaches away from using an integrated layer (such as the “reflective layer having phosphorescent coatings” recited in claim 1) and suggests the use of a separate fluorescent pigment layer. Further, while the Examiner stated in the Examiner's Answer that the Appellants have not claimed a “single reflective layer,” Appellants submit that claim 1 does require a layer that has both light reflecting and light converting properties, which Chen lacks.

The Examiner further stated, in response to Appellants' argument, that “Chen clearly shows fluorescent pigment layer 50 optically in contact with the reflecting layer 30. Further, the fluorescent pigment layer 50 is structurally supported, and in physical contact with the

reflecting layer 30 (Figure 3).” Appellants submit that the Examiner has misconstrued the Appellants’ argument. Appellants Appeal Brief states that “the Examiner has provided no basis or support, either in Chen or otherwise, for the assertion that two layers relatively positioned such that they are functionally in optical contact renders one of the layers a ‘coating.’” Thus, rather than arguing whether layer 50 and layer 30 are in optical contact, Appellants are asserting that there is no basis or support for the assertion that two layers relatively positioned such that they are functionally in optical contact renders one of the layers (i.e., layer 50) a “coating.” Appellants submit that the Examiner has provided no support to the contrary.

The Examiner further stated, in response to Appellants’ arguments, that

[t]he phrase “interpose” has been interpreted as [a] phrase indicating the relative positioning of any element. Chen (‘092) teaches the relative position – between the light-conductive plate 10 and the reflective layer 30 – of the fluorescent pigment layer, which has been broadly interpreted as coating.

Further, it would have been obvious to one of ordinary skill in the art at the time of the invention to make the fluorescent pigment layer integral, in optical contact, with the reflective layer, since it has been held that forming in one piece an article which has formerly been formed in two pieces and put together is a merely a matter obvious engineering choice, and involves only routine skill in the art. In re Larson, 340 F.2d 965, 968, 144 USPQ 347, 349 (CCPA 1965).

Appellants maintain that the Examiner’s interpretation of “interpose” still fails to overcome Appellants’ assertion that layer 50 is a not “coating”. In fact, the Examiner’s statement itself, in stating that “the relative position – between the light conductive plate 10 and the reflective layer 30 – of the fluorescent pigment layer [50],” suggests that layer 50 is a separate and distinct layer from reflective layer 30, rather than a coating. Further, as stated in the Appeal Brief, Appellants note that the omission of an element and retention of its function is an indicia of unobviousness. In re Edge, 359 F.2d 896, 149 U.S.P.Q. 556 (C.C.P.A. 1966). Here, Appellants have effectively removed an element from Chen (e.g., separate layers for converting and reflecting light) and maintained a function.

The Examiner further stated, in response to Appellants’ arguments, that

Chen ('092) teaches a fluorescent pigment layer 50 – broadly interrelated as a coating – is in optical contact with the reflective layer 30.

However, Chen ('092) does not disclose a light source including a reflective layer having a phosphorescent material. On the other hand, Baur et al. ('781) discloses an electro-optical display device (Figure 9) comprising a fluorescent plate 1a [i]ncluding a phosphorescent coating – a layer 25 containing phosphorescent particles (Figures 9, column 9, lines 5-10). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the reflective layer with fluorescent coating of Chen ('092) by providing the phosphorescent coating as taught by Baur et al. ('781) for the benefits and advantages of amplifying the brightness of the display device, and for providing afterglow of the display after the device is switched – off.

...
Baur et al. ('781) teaches that an additional phosphorescent coating applied on a fluorescent plate 1a. Thus, teaching of Baur et al. ('781) could be applied on the reflective layer with fluorescent coating of Chen ('092). Further, the motivation for the above-indicated modification includes amplification of brightness of the display device.

Appellants respectfully disagree with the Examiner's assertion. As to Baur et al., Appellants contend that layer 25 (characterized by the Examiner as a "phosphorescent coating") of Baur et al. is not a "coating," and more specifically, is not a coating for a layer that both reflects invisible light and converts invisible light to visible light. Rather, "layer 25 which contains phosphorescent particles" is a separate and distinct layer from plate 1a. Baur et al. at col. 9, lines 3-10. Further layer 25 "has no optical contact with plate 1a." Baur et al. at col. 9, lines 3-10. Appellants therefore submit that the Examiner is not entitled to such a broad interpretation of layer 25 as a "coating." Thus, the combination of Chen and Baur et al., even if proper, fails to recite a "reflective layer having phosphorescent coatings in a substrate, the phosphorescent coated surface reflecting the invisible light from the light source and converting the invisible light into visible light visible to the human eye" as included in the combination of elements of claim 1.

Appellants further contend that Baur et al. in fact teaches away from the proposed combination. The Examiner stated in the Examiner's Answer that "the test [for obviousness] is what the combined teachings of the references would have suggested to those of ordinary skill in the art. Thus, based on the teaching of Baur, one of ordinary skill in the art would

have been motivated to modify the device of Chen for efficient conversion of invisible light to visible light, and for producing afterglow of the device.” Appellants respectfully disagree, and submit that Baur et al. teaches the use of a phosphorescent layer (25) that is not in optical contact with an adjacent layer (i.e., layer 1a). This is contrary to the teachings of Chen. Thus, Appellants submit, as previously indicated in the Appeal Brief, that the combination of Chen and Baur et al. is improper because Baur et al. teaches away from their combination. See In re Grasselli, 713 F.2d 731, 743 (Fed. Cir. 1983).

IV. REJECTION OF CLAIMS 10 AND 13-16 UNDER 35 U.S.C. § 103(a) BASED ON CHEN IN VIEW OF VOSSLER

With respect to claims 10 and 13-16, the Examiner stated, in response to Appellants’ arguments, that

[a]s detailed in section 5 of the Final Rejection, [r]egarding claim 1, Chen (‘092) discloses a light source including a reflective plate 30 in combination with a fluorescent pigment layer 50.

However, Chen (‘092) does not specifically teach a display layer being illuminated by infrared light. Instead, Chen (‘092) makes the use of ultraviolet light source for illumination of the display layer.

On the other hand, Vossler (‘819) discloses a bi-directional presentation display 10 (Figures 1 and 2) illuminated with an IR light source – alternate to the light tube 70 – (Figure 2, column 5, lines 44 and 49-57).

It would have been obvious to one of ordinary skill at the time of the invention to further modify the lighting system of Chen (‘092) in view of Baur (‘781) by providing the IR-based lighting system as taught by Vossler (‘819) for the benefits of making it usable in the dark or at night with night vision equipment.

With respect to claim 10 (and corresponding dependent claims 13-16), Appellants submit that the Examiner has still not established a prima facie case of obviousness. More specifically, the Examiner has not established that the combination of Chen and Vossler teach or suggest “reflecting the infrared light from the light source by the reflective layer” and “converting the infrared light into visible light visible to the human eye by the reflective layer,” as recited in claim 10. The Examiner relies on the combination of layers 30 and 50 in

Chen to perform the two functions performed by the one “reflective layer” recited in claim 10. In Chen, the light passing through the fluorescent pigment layer 50 is then reflected by the light reflection layer 30. In claim 10, both functions are performed by the same layer. As discussed with respect to claim 1, Appellants submit that the Examiner is not entitled to such a broad interpretation of Chen. As to Vossler, it fails to make up for the deficiencies of Chen regarding the lack of a teaching or suggestion of a reflective layer that both reflects and converts infrared light to visible light.

VI. REJECTION OF CLAIM 12 UNDER 35 U.S.C. § 103(a) BASED ON CHEN IN VIEW OF VOSSLER AND FURTHER IN VIEW OF LUEDER

The Examiner did not specifically address claim 12 except for stating that “[r]egarding claims 10, 12, 17-19, 22, and 24-27, the above-indicated responses presented for Claim 1 are equally applicable.” Appellants submit that Vossler and Lueder fail to make up for the deficiencies of Chen with respect to claim 10, as discussed herein in sections II and IV.

VII. REJECTION OF CLAIMS 17-19, 22, AND 24-27 UNDER 35 U.S.C. § 103(a) BASED ON CHEN IN VIEW OF BAUR ET AL. AND FURTHER IN VIEW OF KIM ET AL.

The Examiner stated, with regard to claims 17-19, 22, and 24-27, that “the above-indicated responses presented for Claim 1 are equally applicable.” Independent claim 17 recites a combination including, among other elements, “a light converter, converting the invisible light to light having a wavelength visible to the human eye, the light converter having metallized coatings on a substrate to reflect visible and invisible light, and the light converter having phosphorescent coatings on the substrate.” Appellants submit that the Examiner has still not established a prima facie case of obviousness for the rejected claims at least because, as discussed herein with respect to independent claims 1 and 10, (1) there is no teaching or suggestion in Chen that the “fluorescent pigment layer 50” is a “coating,” and (2) Chen fails to teach or suggest a light converter that both reflects light and converts invisible light to visible light. Further, as also discussed herein with respect to independent claim 1,

Baur et al. fails to make up for the deficiencies of Chen with respect to claim 17, and in fact teaches away from the proposed combination. As to Kim et al., it fails to make up for the deficiencies of Chen and Baur et al. with respect to claim 17.

CONCLUSION

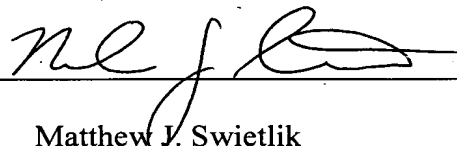
In view of the foregoing, as well as in view of the Argument set forth in Appellants' Appeal Brief, Appellants respectfully request that the Board reverse all claim rejections and indicate that a notice of allowance respecting all pending claims should be issued.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 06-1447.

Should no proper payment be enclosed herewith, as by a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is hereby authorized to charge the unpaid amount to Deposit Account No. 06-1447.

Respectfully submitted,

Date 7/19/2006

By 

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